Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method ~~for~~ of fabricating a semiconductor device, using a plasma etching system including a vacuum chamber, a susceptor arranged in the vacuum chamber for mounting a semiconductor wafer, a gas introducing a material gas to the vacuum chamber and a means for introducing ~~a material gas to the vacuum chamber and a means for introducing~~ high-frequency power, the method comprising the steps of producing plasma from a gas introduced into the vacuum chamber by the gas introducing means using the high-frequency power; forming a plurality of holes selectively on a main surface of the semiconductor wafer in an atmosphere of the plasma;

during or after the hole forming step, irradiating the light having a continuous spectrum ~~on~~ in a flat portion and a hole portion of the main surface of the semiconductor wafer and measuring the amount of shift along the direction of the wavelength axis between ~~change in~~ the reflectivity of detection light for the flat portion and the reflectivity of detection light for the hole portion; and calculating the depth of the hole portion based on the wavelength axis direction shift amount, film thickness data and hole pattern.

2. (original) A method for fabricating a semiconductor device as defined in Claim 1, wherein the light enters the main surface of the semiconductor wafer at right angles or diagonally thereto, and the reflectivity is measured from the ratio of intensity between the incident light and the reflected light.

3. (canceled)

4. (original) A method for fabricating a semiconductor device as defined in Claim 1, wherein the main surface of the semiconductor wafer has an interlayer insulating film, and the plurality of the holes are formed in the interlayer insulating film.

5. (currently amended) A method of fabricating a semiconductor device comprising:

(1) a step of forming an insulating film on the semiconductor substrate and a mask on the insulating film, the mask having a hole portion formed with a plurality of hole patterns and a flat portion not formed with a hole pattern;

(2) a step of forming a plurality of holes in the insulating film by dry etching based on the mask;

(3) a step of irradiating light having a continuous spectrum on a flat portion and a hole portion of the film, measuring a change in the wavelength axis direction shift amount between the reflectivity of detection light in the flat portion and the reflectivity of detection light in the hole portion and calculating the depth of ~~forming a plurality of holes through~~ the hole portion based on the measurement result thereby to control the operation to form a plurality of holes through the insulating film ~~of measurement~~ during the step of (2); and

(4) a step of burying a metal in the plurality of the holes of the hole portion.

6. (original) A method for fabricating a semiconductor device as defined in Claim 5, wherein:

the light enters a main surface of a semiconductor wafer at right angles or diagonally thereto, and the reflectivity is measured from the ratio of intensity between the incident light and the reflected light during the step (2).

7. (canceled)

8. (canceled)

9. (original) A method for fabricating a semiconductor device as defined in Claim 8, wherein the light is incident on a main surface of a semiconductor wafer at right angles or diagonally thereto, and a reflectivity thereby is measured from the ratio of intensity between the incident light and its reflected light during the step (2).

10. (original) A method for fabricating a semiconductor device as defined in Claim 9, wherein the light is white light.

11. (original) A method for fabricating a semiconductor device by preparing a plasma etching system including a vacuum chamber, a susceptor arranged in the vacuum chamber for installing a semiconductor wafer, a gas introducing means for introducing the material gas to the vacuum chamber and a high-frequency power introducing means, the method comprising the step of converting to a plasma gas introduced into the vacuum chamber by the gas introducing means and forming a plurality of holes selectively on a main surface of the semiconductor wafer in a plasma atmosphere,

the plasma etching system including a light source for radiating detection light, a detection system having a beam splitter arranged in a light path, a lens, a spectrometer and a diode array, an XY movable table movable in horizontal direction in the detection system and a computer for storing data of the detection system, and the detection light from the light source being radiated on the main surface of the semiconductor wafer through a quartz window formed in a ceiling portion of the vacuum chamber; and

the method further comprising

a step of radiating the detection light from the light source in a flat portion and a hole portion of the main surface of the semiconductor wafer, and measuring the change in reflectivity in the flat portion and the hole portion, during or after the step of forming the holes.

12. (canceled)

13. (canceled)

14. (canceled)

15. (currently amended) A method ~~for~~ of fabricating a semiconductor device by preparing a plasma etching system including a vacuum chamber, a gas introducing means for introducing the material gas to the vacuum chamber and a high-frequency power introducing means, the method comprising the step of converting, ~~to a plasma,~~ by the high-frequency power, to a plasma the gas introduced into the vacuum chamber by the gas introducing means and forming a plurality of holes selectively on a main surface of a semiconductor wafer in a plasma atmosphere, wherein:

the plasma etching system includes an etching depth inspection unit having a first electrode arranged in contact with the semiconductor wafer and movable in horizontal direction, a second electrode arranged in opposed relation to first electrode and movable in vertical direction, an impedance meter electrically connected to ~~the~~ first and second electrodes, and a computer electrically connected to the impedance meter through an A/D converter;

the method comprising a step of measuring an electrostatic capacitance of a flat portion and a hole portion of the ~~water~~ wafer on the main surface of the semiconductor wafer by ~~an~~ the etching depth inspection unit after forming the holes, and a step of comparing the electrostatic capacitance acquired from ~~a~~ the flat portion and the hole portion with each other and determining the difference between a measurement value of the electrostatic capacitance of the flat portion and a measurement value of the electrostatic capacitance of the hole portion.

16. (original) A method for fabricating a semiconductor device as defined in Claim

15, further comprising a step of scanning the semiconductor wafer by the second electrode for measuring the hole portion, a scanning step determining the position of the second electrode in such a manner as to minimize the electrostatic capacitance.

17. (original) A method for fabricating a semiconductor device as defined in Claim 15, wherein the plasma etching system includes a load lock chamber and an unload lock chamber, and the first and second electrodes are arranged in the unload lock chamber.

18. (original) A method for fabricating a semiconductor device as defined in Claim 15, wherein a plurality of protruded electrodes in contact with the reverse surface of the semiconductor wafer are arranged on the first electrode.

19. (original) An apparatus for fabricating a semiconductor device as defined in Claim 15, wherein the forward end portion of the second electrode constitutes a circular surface having a diameter of 0.1 mm to 3 mm.

20. (original) A method for fabricating a semiconductor device as defined in Claim 15, wherein the interval between the second electrode and the surface of the semiconductor wafer is between 0.1 μm and 50 μm.